

*PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO.1 GRANT LASTING 12 MONTHS FOR CONDUCTING RESEARCH IN ACCORDANCE WITH ART. 22 OF LAW OF 30.12.2010 NO. 240 AT THE DEPARTMENT OF MANAGEMENT, INFORMATION AND PRODUCTION ENGINEERING OF THE UNIVERSITY OF BERGAMO (ACADEMIC RECRUITMENT FIELD 09/G1 – SYSTEMS AND CONTROL ENGINEERING) ACADEMIC DISCIPLINE ING-INF/04 – SYSTEMS AND CONTROL ENGINEERING*

*announced with decree of the Rector Rep. no. 74/2018 of 26.01.2018 and posted on the official registry of the University on 26.01.2018*

### **RESEARCH PROJECT**

**TITLE: "Joint use of Big-data technology and machine learning algorithms to design a control system to decrease the transient time"**

The goal of the project is the joint use of the Big Data technology (where all process data, including automation control parameters are available) and Machine Learning methodologies to optimize the initial parameters of the control system to reduce the transient (expressed in number of samples) needed to reach the target.

The first part of the activities will be dedicated to organizing, classifying and analyzing process data, in order to identify repetitive behaviors and phenomena related to the initial transient.

The second part of the task consists in identifying and optimizing the initial parameters of the control system through appropriate methodologies (statistical models, machine learning) for reducing the initial transient for achieving the target thickness.

The third part of the activities aims at implementing the automatic update of the optimal initial parameters based on the evolution of working conditions (i.e. new dimensions).

Expected results:

- A. Classification of products with behavior and repetitive phenomena related to the initial transitional period
- B. Optimized Initial Parameters of Control System to Reduce the Initial Transition of Target Reach
- C. Algorithm for updating optimized values of initial parameters.